*** PUBLIC VERSION ***

STATE OF ILLINOIS
ILLINOIS COMMERCE COMMISSION

REBUTTAL TESTIMONY ON REHEARING OF JAMES E. KEOWN ON BEHALF OF AMERITECH ILLINOIS DOCKET 00-0393

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME.

A. My name is James E. Keown.

Q. ARE YOU THE SAME JAMES KEOWN THAT FILED DIRECT TESTIMONY ON REHEARING IN THIS PROCEEDING?

A. Yes.

II. PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY ON REHEARING?

A. The purpose of my rebuttal testimony on rehearing is to respond to the direct testimonies on rehearing of Terry Murray on behalf of Covad Communications Company ("Covad") and Rhythms Links, Inc. ("Rhythms"), Danny Watson on behalf of Rhythms, James D. Dunbar on behalf of Sprint Communications, L.P. ("Sprint"), Melia Carter and Larry Gindelsberger on behalf of Covad, and Sidney L. Morrison and Michael Starkey on behalf AT&T Communications of Illinois, Inc. as they relate to Project Pronto and the topics I have previously addressed.

III. RESPONSE TO CLEC WITNESSES

Q. MR. WATSON (AT 6) IN HIS REBUTTAL TESTIMONY STATES THAT PRONTO IS NOT AN OVERLAY NETWORK BUT SIMPLY A PLANT MODERNIZATION. DO YOU AGREE WITH THIS CHARACTERIZATION?

A. No, not entirely. Mr. Watson is correct in that part of Project Pronto is a plant modernization. However, what Mr. Watson fails to explain is that in a typical plant modernization project, existing services are generally moved from the old facilities to the new modern facilities and the old facilities are retired. This is not the case with Pronto DSL deployment. After Pronto NGDLCs are deployed, the existing facilities generally are not retired. Customers are be moved to the Pronto NGDLC network unless they purchase DSL service from a provider. Leaving the existing facilities in place and continuing to provision services over them is a characteristic of an overlay network.

Q. PLEASE COMMENT ON MR. DUNBAR'S ASSERTION IN HIS REBUTTAL TESTIMONY (AT 8) THAT PRONTO IS NOT AN OVERLAY NETWORK BUT IS A TYPICAL CSA DESIGN.

A. Mr. Dunbar spends a great deal of time expounding on and explaining the carrier serving area (CSA) design concepts. However, his characterization still does not address the fact that Pronto is an overlay design. CSA simply specifies rules that should be followed in laying out a DLC serving area. CSA rules are used routinely in designing **new** DLCs or NGDLCs. SBC and Ameritech Illinois have been using CSA design rules for over 15 years and continue to use the CSA rules in the design of Pronto NGDLCs. Pronto NGDLC are facilities deployed in addition to the existing facilities. The NGDLCs are not replacing existing facilities. Nor are the existing facilities being retired and replaced by the Pronto NGDLCs. It is these features of the Pronto deployment that makes it an overlay network. The fact that Pronto uses the CSA design rules is not relevant to whether it is an overlay.

Q. MR. WATSON (AT 11) ASSERTS THAT CLECS REQUIRE LINE CARD COLLOCATION TO BE "ASSURED THAT THEY CAN USE THE PROJECT PRONTO ARCHITECTURE TO THE FULLEST EXTENT THAT IS TECHNICALLY POSSIBLE TO ACHIEVE." MR. DUNBAR (AT 31) ALSO

SUPPORTS THIS ASSERTION. WOULD ALLOWING CLECS TO "COLLOCATE" LINE CARDS OFFER THEM THIS ASSURANCE?

A. No. First, the Broadband Service would already provide CLECs with the current capabilities of the Pronto DSL architecture, and line card "collocation" would not make any new or different capabilities available to CLECs.

Second, even if new types of line cards were introduced that were compatible with Pronto NGDLCs, that does not mean that allowing CLECs to "collocate" such cards would be trouble-free. Mr. Watson, however, nevertheless seems to suggest that Ameritech Illinois should be forced to deploy whatever service is requested by Rhythms or other CLECs, without consideration of the adverse impact that might have on other services provided by the NGDLCs. No company, including Rhythms, would put its network at risk without carefully evaluating the impacts of deploying new services.

Third, Mr. Watson and Mr. Dunbar assume that the required common software would automatically be loaded in the systems to make any new type of compatible line card immediately usable with the existing NGDLC. As SBC witnesses have stated many times in the past, the NGDLCs are total systems. There is software at the system level, shelf level, and card level that all must match in order for the service to be provided. In addition, as Dr. Ransom stated (at 6) in his direct testimony, the element managers must also have the appropriate version of software to allow the system to recognize the card and for the service to be provisioned and monitored.

Q. MR. WATSON (AT 11) STATES THAT THE FIBER USED IN PRONTO HAS UNLIMITED BANDWIDTH POTENTIAL. DO YOU AGREE WITH THIS DESCRIPTION?

A. Mr. Watson's statement would be accurate if he had also explained that it is not the fiber, but rather the attached electronics, that determine the data bandwidth. The electronics in

the DSL-capable channel banks that would be deployed with Project Pronto have a maximum optical rate (bandwidth) of OC3c (155mbps). Regardless of what Mr. Watson suggests, the OC3c rate is the full technical capability of the optical output for the Litespan DSL channel bank, regardless of the fiber attached to the channel bank. Mr. Watson also asserts that the three DSL channel banks can be "unchained" just as I explained in my direct testimony (at 19). The problem with "unchaining," however, is that adding the fibers necessary for "unchaining" would also require additional ports on the OCD. That is, each OC3c would need its own port on the OCD, meaning an NGDLC would need three ports on the OCD (one for each channel bank's dedicated OC3c) rather than the one port per NGDLC if Pronto were deployed as planned. This creates a capacity problem because, as Mr. Boyer stated in his direct testimony (at 41), the OCD is port limited. If Mr. Watson's suggestion were followed, the OCD would exhaust much sooner than anticipated. Taken together, then, Mr. Watson's suggestions would certainly cause capacity problems in the Pronto network.

Q. MR. WATSON (AT 26 AND 31) ASSERTS THAT ALLOWING CLECS TO OWN AND "COLLOCATE" THEIR OWN LINE CARD IS AS EFFICIENT AS ILEC OWNERSHIP AND WOULD NOT RESULT IN STRANDED CAPACITY. IS MR. WATSON CORRECT?

A. No. Mr. Watson's assertion would be correct only if there were one owner and only one owner of all the cards, but if line card "collocation" were available there would probably never be a single CLEC controlling all the cards in an NGDLC. As I discussed in my direct testimony, the unused ports on each non Ameritech Illinois-owned card would cumulatively create stranded ports in the NGDLC. Mr. Watson's rebuttal testimony (at 31) hypothesizes a situation where each port on a line card would be used before the next card is added. That situation could exist only if individual ports on a line card could be

assigned to any CLEC. If Ameritech Illinois is not allowed to own the line cards, assignment of service cannot be made to each and every port, as each CLEC's line card would have to be provisioned separately and shared use of the cards would not be possible. It is only under the arrangement where Ameritech Illinois owns the line cards that the efficiencies Mr. Watson discusses can be achieved.

Q. MR. WATSON (AT 35) AND MR. DUNBAR (AT 36) BOTH ASSERT THAT IF IT BECOMES POSSIBLE IN THE ALCATEL EQUIPMENT TO HAVE MULTIPLE PVPS PER CHANNEL BANK, THE CAPACITY PROBLEMS OF THE LITESPAN WILL BE ELIMINATED. ARE THEIR ASSERTIONS ACCURATE?

A. No. Both Mr. Watson and Mr. Dunbar are absolutely incorrect. To begin with, neither of them explains how to access a PVP on an "unbundled" basis, no matter how many PVPs there might be. This really is the main point in determining the impact that requiring a PVP "UNE" would have on the capacity of the NGDLC. Because of the way the OC3c facility terminates on the channel bank, there is still no means to access an individual PVP without robbing the channel bank or the NGDLC of physical electronics and bandwidth and thereby reducing the NGDLC's capacity. In addition, neither Ameritech Illinois nor the CLECs know for certain how this future feature of multiple PVPs per channel bank is being designed or will work (as the Alcatel representative referenced in Mr. Watson's testimony has stated). Attachment JEK-R1 is a copy of the email from Mr. John Matic of Alcatel that provides some information on the design intent of the multiple PVPs feature.

Q. MR. DUNBAR (AT 36) ASSERTS THAT THE BANDWIDTH CAPACITY OF THE LITESPAN CAN BE INCREASED BY 1) UPGRADING LITESPAN 2000 TO LITESPAN 2012 2) ACTIVATING AN ADDITIONAL PAIR OF FIBERS "FROM THE RT TO THE CO AND ANY OPTICS MEETING THE COMBINED BANDWIDTH DEMANDS CAN BE PLACED IN THE CO AND THE RT" AND 3) INSTALLING A FULL LITESPAN 2000 SYSTEM. COULD YOU ADDRESS EACH OF THESE "SOLUTIONS"?

A. Yes. Mr. Dunbar's first suggestion of upgrading the Litespan 2000 to Litespan 2012s has three fallacies. First, this is not technically feasible. There is no process or procedure for "upgrading" a Litespan 2000 to a Litespan 2012. There is also no similarity between the common control areas of the Litespan 2000 and the Litespan 2012. Attachment JEK-R2 shows the common control area for a Litespan 2000 and the Litespan 2012. Second, even if this were technically possible, customers would experience service disruption while Ameritech Illinois attempted to change all the common control equipment in the system. Third, doing this would not increase the OC3c capacity of the of the DSL channel bank. I assume that in the second suggestion Mr. Dunbar is suggesting placing an add-drop multiplexer or ATM device next to the NGDLC. For example, I assume he believes placing an OC48 multiplexer or an ATM device would allow for increased capacity at the NGDLC. That is incorrect. Adding the extra equipment would not increase the bandwidth capacity of the DSL channel bank. The optical bandwidth in the channel bank is still an OC3c output. If Mr. Dunbar is suggesting adding additional fibers between the RT and the central office, Mr. Boyer addressed the impact on the OCD in his direct testimony.

If a service is deployed that consumes either the physical capacity or logical/bandwidth capacity of the NGDLC, the only remedy if additional capacity is needed is the third option Mr. Dunbar discusses. Ameritech Illinois agrees with Mr. Dunbar that this is the least efficient relief method. It is this very potential that has helped caused Ameritech Illinois to suspend deployment in Illinois.

Q. MR. DUNBAR (AT 22) ASSERTS THAT THE COST TO REPLACE NGDLCS AS A RESULT OF PVP CAPACITY EXHAUST WOULD NOT REQUIRE ADDITIONAL VOICE EQUIPMENT, POWER, ETC. IS MR. DUNBAR'S ASSERTION ACCURATE?

A. No. Mr. Dunbar fails to consider that the new NGDLC would also be equipped for line sharing, so additional voice terminations have to be provided on the switch. The real driver for this requirement is the use of integrated DLCs. Therefore, each new Litespan 2000 will have its own OC3 TDM for voice that will have to terminate on the voice switch. In addition to the switch growth, the OCDs would have to be expanded to terminate the additional OC3c for the data traffic. As Mr. Dunbar should be aware, placing a new NGDLC could very well require securing new rights of way or easements, placing additional fiber and conduit and most likely new copper to serve the existing SAI, or creating a new SAI to maintain the design intent of Pronto (i.e. maximum copper loop lengths of 12kft). While this may not be required at all sites, it is certainly a strong possibility at many of them.

Q. MR. DUNBAR (AT 25) ASSERTS THAT AMERITECH ILLINOIS CREATED THE INEFFICIENCIES THAT WOULD BE ASSOCIATED WITH LINE CARD "COLLOCATION" AND COULD HAVE DESIGNED PRONTO BY ASSIGNING A PORT ON EACH CARD TO THE VARIOUS SAIS. COULD YOU COMMENT ON THIS PLEASE?

A. Yes. First let me state that as an engineer, I recognize there are often multiple ways to engineer a project. However, not all ways are the most efficient from a cost or operational aspect. Mr. Dunbar asserts that Ameritech Illinois could/should have wired one port from each slot to each of the SAIs. There are two engineering flaws in Mr. Dunbar's logic. First, he assumes the demand is the same in all SAIs. Following Mr. Dunbar's engineering would result in many DSL-capable pairs being placed at the wrong SAIs. The geographic areas and propensity to buy in those areas are all different and require different numbers of pairs. The second fallacy in Mr. Dunbar's thinking is that the copper splicing is actually done in 25-pair groups (e.g. binder groups) to allow the construction of the facilities to done in an efficient manner. What Mr. Dunbar suggests

would slow down the construction, force the splicing technician to pick pairs from individual binder groups and splice to multiple pairs in binder groups going to the SAIs. This method would add unnecessary time and cost to build the NGDLCs and create problems for maintenance technicians seeking to identify pairs on repair jobs. This method also would increase the capacity problems of line card "collocation" because a CLEC with two customers in an SAI would need two different cards and two different slots to serve them.

Q. MR. DUNBAR (AT 26), MR. MORRISON (AT 3-6) AND MR. STARKEY (AT 3) ASSERT THAT THE INEFFICIENCIES OF LINE CARD "COLLOCATION" COULD ALSO BE ELIMINATED BY PLACING A CROSS CONNECT AT EACH RT SITE. COULD YOU COMMENT ON THEIR ASSERTIONS?

A. As I stated earlier, there are often multiple ways to engineer outside plant. What Mr. Dunbar and Mr. Morrison both recommend is not the most efficient way to engineer the NGDLCs. Mr. Dunbar, for example, suggests a cross-connect device with "permanent or semi-permanent" jumpers. A "permanent" point would be a splice, which is the most efficient way to engineer NGDLCs. By semi-permanent I assume Mr. Dunbar means building a new cross-connect device. Building these cross-connect devices would add needless cost to Project Pronto and add no real benefits. My estimate is that to do this would cost approximately [redacted] per site in capital cost alone. For Illinois alone, this could add an additional [redacted] to the project.[1] This does not include the additional cost to administer the "cross-connect" and would also add an additional point of potential trouble in the network. These costs would have to be added into the cost of the wholesale product.

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1 Ameritech Illinois would have had approximately 1470 cabinet locations that would require new cross-connect facilities. If huts and CEVs were counted, a total of 2090 sites would require new equipment and the added capital cost would be [redacted].

Q. MS. MURRAY (AT 20) ASSERTS THAT OTHER CARRIERS WOULD UTILIZE THE PRONTO ARCHITECTURE AS EFFICIENTLY AS THE AMERITECH AFFILIATE, AADS, AND THAT BY ALLOWING CLECS TO LEASE "UNBUNDLED" PRONTO ELEMENTS THEIR EFFICIENCY WOULD BE INCREASED. COULD YOU COMMENT?

A. As I have shown in my direct testimony, "unbundling" Pronto would undeniably create a less efficient network. The same inefficiencies would be created no matter who used the Pronto "UNEs," be it AADS or any other CLEC. What Ms. Murray would have this Commission believe is that every CLEC would utilize every port on every card. This too is not a reasonable assumption. Ms. Murray fails to explain how CLECs would utilize the facilities "more judiciously" than Ameritech Illinois. Throughout her discussion Ms. Murray fails to explain by example or otherwise how CLECs as a group would or could utilize the Pronto architecture more efficiently if it were unbundled.

Q. *COULD YOU EXPLAIN HOW YOU ARRIVED AT THE ASSUMPTION THAT* CLECS WOULD HAVE ONE CUSTOMER PER SAI?

A. Yes. I reviewed a chart on DSL deployment presented by Telechoice at a DSL Forum meeting in December 2000. Telechoice is recognized as an industry leader in reporting the progress of the deployment of DSL. The data in the chart, included as Attachment JEK-R3, reflect the number of DSL lines for ILECs and CLECs and the per cent split between business and residence as well as the number of central offices CLECs had equipped. The data in this chart based on the number of DSL lines and number of offices for CLECs indicate approximate 49 customers per CLEC-equipped CO. Based on my direct testimony describing the build of Pronto in Illinois, there are approximately 20 NGDLCs per central office in Illinois with 3-5 SAIs per NGDLC. Using the average of 4 SAIs per NGDLC there will be 80 (4 SAIs times 20 NGDLCs) per central office. If one assumes: 1) the CLECs will acquire the same number of customers per central office (i.e.

49) and 2) all of the new customers were provisioned on Pronto, over that would equate to less than one customer per SAI for all CLECs (49 customers per central office divided by 80 Pronto SAIs per central office).

Q. MS. MURRAY (AT 22) ASSERTS "WHEN COMPETITORS OBTAIN A STANDARD UNBUNDLED ADLU ARRANGEMENT, SBC-AMERITECH WILL BE ABLE TO MANAGE THE DEPLOYMENT OF THOSE UNES HOWEVER IT WISHES, INCLUDING ASSIGNING MULTIPLE COMPETITORS TO CHANNELS ON THE SAME CARD (AS IT CURRENTLY ABLE TO DO WITH ANY OTHER UNBUNDLED ELEMENT)." DO YOU AGREE WITH MS. MURRAY'S ASSERTION?

A. While I am not the UNE expert, Ms. Murray's technical understanding is very flawed. I assume what she means by "channels" is ports. My understanding is if the card is leased to a CLEC as a "UNE" (which is what the Commission Order refers to), the other ports on that card would not be assignable to other carriers.

Q. MR. GINDLESBERGER (AT 6) MAKES THE FOLLOWING ASSERTION: "IT IS STANDARD PRACTICE IN THE TELECOMMUNICATIONS INDUSTRY THAT CAPACITY IS MANAGED BY RELYING ON FORECAST, MONITORING USAGE, AND AS NECESSARY GROWING THE SYSTEMS." PLEASE COMMENT ON THIS ASSERTION.

A. Mr. Gindlesberger's assertion is accurate as long as there is one and only one owner of the equipment. What Mr. Gindlesberger does not state, however, is that Covad and other CLECs can monitor the capacity of their CO-based DSLAM because they are the single owner of the asset and can monitor and control the services delivered over their respective technology. Likewise, Ameritech Illinois would be able to efficiently manage the capacity of the NGDLCs only if it could monitor and control impacting services.

Q. COULD YOU COMMENT ON THE ASSERTIONS OF MS. CARTER AND MR. GINDLESBERGER THAT THE PRONTO-BASED RT WILL "IMPAIR" CLECS DUE TO THE INTERFERENCE GENERATED BY THE NGDLC-BASED DSL SIGNAL?

A. Yes. I will address this issue from a technical perspective. SBC has worked and continues to work with NRIC committee and the T1E1 committee toward technical solutions in case there are interference issues. SBC, like the CLECs, is concerned with this issue also because its Advanced Services Affiliate has CO - DSLAMs. In other SBC regions, the deployment of NGDLC-based DSL continues along with CO-based DSL. In those regions where both NGDLC-based DSL and CO-based DSL has been sold, SBC has had the opportunity to make measurements to determine and analyze the impact of each on the other. Results of testing and measurements made indicate that the two services co-exist with no noticeable impact on customer service. Again, as I stated in my direct testimony (at 20) the FCC has chartered NRIC to review this concern and make recommendations to the FCC.

Q. COULD YOU DISCUSS MS. MURRAY'S TESTIMONY (AT 14) REGARDING CLECS ORDERING PVPS AS "UNES" AND WHETHER THIS CONSUMES ONE-THIRD OF THE DSL CAPACITY OF THE NGDLC?

A. As I discussed in my direct testimony, in a cabinetized nine channel bank configuration, there is a maximum of three DSL-capable banks. The Alcatel Litespan currently has only one PVP per DSL-capable channel bank. As I have explained, this limitation would open the door to significant stranded-capacity problems if CLECs could lease PVPs as "UNEs." Ms. Murray does not deny this fact, but suggests that Ameritech Illinois should ignore those risks and adopt a "don't worry" attitude. Ms. Murray asserts that no CLEC that purchased PVPs or large bandwidths would be in business and that Pronto is "radically undersized."[2] The first assertion begs the question of why the CLECs requested PVPs if purchasing them would put them out of business. As for her reference

2 Terry Murray rebuttal testimony at 15.

to Pronto being undersized, the NGDLCs used in the Pronto deployment are sized to serve specific geographic areas with a specific number of customers. Allowing CLECs to own and control the line card or lease PVPs, however, would significantly change the economic design of Pronto. Ms. Murray tries to avoid that fact by speculating that TELRIC-based pricing would allow Ameritech Illinois to recover its costs — even though she claims CLECs would not actually buy or pay for any PVPs. Dr. Aron in her rebuttal testimony addresses the impact and application of TELRIC pricing.

Q. SPRINT'S MR. BURT (AT 9-10) STATES THAT SPRINT DESIRES A VARIABLE BIT RATE ("VBR") QUALITY OF SERVICE OVER PROJECT PRONTO DSL FACILITIES. IS THAT POSSIBLE?

A. No. The Alcatel Litespan equipment at this time is not technically capable of providing a VBR QoS. The ADLU cards include three PVCs with UBR QoS and one PVC with CBR QoS, but no PVC with VBR QoS.

Q. MS. MURRAY ASSERTS YOUR COST ANALYSIS SHOULD HAVE CONSIDERED THE FACT THAT THE COMMISSION WOULD APPLY TELRIC AND THAT AMERITECH WOULD BE MORE THAN COMPENSATED FOR THE CAPACITY. WOULD YOU PLEASE COMMENT?

A. First, the cost analysis in Attachment JEK-4 of my direct testimony is intended to convey the potential impact of the Order issued by the Commission in Docket 00-393. The $519M in my direct testimony correctly reflects the investment in NGDLCs and central office equipment Ameritech Illinois would have spent in Illinois. In addition to showing the total investment in Illinois and the cost impacts of defining PVPs as "UNEs", Attachment JEK-4 of my direct testimony also shows the cost and capacity impacts of multiple owners placing line cards in Ameritech Illinois' NGDLCs. It also shows how multiple cards would multiply the impact on capacity and thus impose additional costs on Ameritech Illinois. The projected additional costs represent scenarios that could be

created by this Order. When capacity in the NGDLCs and OCDs approach exhaust conditions, engineers will trigger jobs to replace the capacity. These jobs will be triggered even though the CLECs may not be utilizing the full capacity of the line card or if the PVPs are leased that consume the bandwidth capacity of the NGDLCs. Again, Dr. Aron addresses the concerns Ameritech Illinois has with cost recovery through TELRIC.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY ON REHEARING?

A. Yes.